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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,157	10/14/2003	William P. Hooper	089339-0384 2003P09294US	4809

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EXAMINER	
WILLOUGHBY, TERRENCE RONIQUE	
ART UNIT	**PAPER NUMBER**
2836	

DATE MAILED: 05/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/685,157	HOOPER ET AL.	
	Examiner	Art Unit	
	Terrence R. Willoughby	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☒ Claim(s) *3 and 5* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10/14/2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/14/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Resistors 142 and 143 on page 9, paragraph **[0024]** are not labeled in the drawing figures. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "the current source" (not numbered) cited on page 9 paragraph **[0023]**, and "receiving a control voltage from a host" on page 8, paragraph **[0019]** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. Claim 3 is objected to as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 3, the phrase "varying the pre-defined voltage" makes the claim indefinite and unclear as how the pre-defined voltage would be varying and set at 4.5 volts in response to the input control voltage in the electrical circuit?

4. Claim 5 is objected to as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 5, the phrase "detecting a magnitude qualification" makes the claim indefinite and unclear? The examiner interprets magnitude qualification to be the voltage detected at the input of the circuit.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-3,10-15, are rejected under 35 U.S.C. 103(a) as being unpatentable over Pancke et al. (US 4,025,823) and in view of Lang et al. (US 4,013,926).

Regarding claim 1, Pancke et al. (Fig. 1) discloses the claimed method for providing undervoltage relay control in a circuit breaker, the method comprising the steps of: an electrical circuit (col. 1, ll. 13-16) connected to the undervoltage relay apparatus and providing a pre-defined voltage (Z2; col. 3, ll. 20-26); receiving a control voltage from a host (K1,K2); conditioning the control voltage in the electrical circuit independently of characteristics of the solenoid ((EM) and col. 3, ll. 20-26), wherein if the received control voltage input is less than a pre-defined voltage(Z2) the electrical circuit will remove power to the solenoid allowing the solenoid to contact mechanical trip switch (ES2) and trip the circuit breaker(col. 4, ll. 20-42). Pancke et al. does not disclose a mechanical latch assembly having a mechanical latch in selective contact with the latch mechanism.

However, Lang et al. (Fig. 1) discloses a mechanically latch assembly having a housing ((7), col. 2, ll. 67-68) mechanical latch and a solenoid, coupled to the circuit breaker, with the solenoid in selective contact with the mechanical latch assembly (abstract, ll. 1-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the mechanical releasing link of Pancke

et al. with a mechanical latch assembly of Lang et al. to provide an improved undervoltage release mechanism for higher performance circuit breakers.

Regarding claims 2 and 3, Pancke et al. in view of Lang et al. discloses the claimed said method of claim 1.It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the pre-defined voltage to be 4.5 v based on the desired voltage ratings of the circuit and therefore, the designer has the opportunity to pick the right configuration required by the features and design specifications for the rest of the circuit as a whole, since it has been held that discovering optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 10, Pancke et al. in view of Lang et al. discloses the claimed said method of claim 1. Pancke et al. (Fig. 1) discloses the claimed said electrical circuit providing electrostatic discharge protection circuit (V1) coupled to the control voltage input (K1, K2).

Regarding claim 11, Pancke et al. in view of Lange et al. discloses the claimed said method of claim 1. Pancke et al. discloses the claimed said control voltage is one of alternating type voltage and direct type voltage (col. 2, ll. 50-57).

Regarding claim 12, Pancke et al. (Fig. 1) discloses the claimed undervoltage relay controller apparatus monitoring voltage of a circuit breaker, the undervoltage relay controller apparatus comprising: a housing (col. 2, ll. 50-57); an electrical circuit (col. 1, ll. 13-16), having a voltage input (K1, K2) and voltage output (K5,K6), mounted in the housing and coupled to the mechanical trip switch (ES2), wherein a control voltage

input is less than a pre-defined voltage(Z2), the electrical circuit will remove power to the solenoid allowing the solenoid to contact mechanical trip switch and trip the circuit breaker(col. 4, ll. 20-42). Pancke et al. does not disclose a mechanical latch assembly having a mechanical latch in selective contact with the latch mechanism.

However, Lang et al. (Fig. 1) discloses a mechanically latch assembly having a housing ((7), col. 2, ll. 67-68) mechanical latch and a solenoid, coupled to the circuit breaker, with the solenoid in selective contact with the mechanical latch assembly (abstract, ll. 1-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the mechanical releasing link of Pancke et al. with a mechanical latch assembly of Lang et al. to provide an improved undervoltage release mechanism for higher performance circuit breakers.

Regarding claim 13, Pancke et al. in view of Lang et al. discloses the claimed said method of claim 12. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the pre-defined voltage to be 4.5 v based on the desired voltage ratings of the circuit and therefore, the designer has the opportunity to pick the right configuration required by the features and design specifications for the rest of the circuit as a whole, since it has been held that discovering optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 14, Pancke et al. in view of Lang et al. discloses the claimed said method of claim 12. Pancke et al. (Fig. 1) discloses the claimed said electrical

circuit includes an electrostatic discharge protection circuit (V1) coupled to the control voltage input (K1, K2).

Regarding claim 15, Pancke et al. in view of Lange et al. discloses the claimed said method of claim 12. Pancke et al. discloses the claimed said control voltage is one of alternating type voltage and direct type voltage (col. 2, ll. 50-57).

7. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pancke et al. (US 6,697,243).

Regarding claims 19, Pancke et al. (Fig. 1) discloses the claimed said undervoltage relay controller apparatus monitoring voltage of a circuit breaker having a trip assembly, the undervoltage relay controller apparatus comprising: a housing (col. 2, ll. 50-57); a means for contacting ((EM) and col. 3, ll. 20-26) the trip assembly mounted in the housing ((ES2) and col. 4, ll. 37-41); and a means for monitoring the voltage of the circuit breaker (col. 2, ll. 50-51) and coupled to the means for contacting (EM), wherein a control voltage input (col. 2, ll. 50-51) to the means for monitoring is conditioned, independently of characteristics of the means for contacting, and wherein if the received control voltage input is less than a pre-defined voltage(Z2), the means for monitoring will remove power to the means (EM) for contacting allowing the means for contacting the trip assembly and trip the circuit breaker(col. 4, ll. 20-42).

Regarding claim 20, Pancke et al. discloses the claimed said undervoltage relay controller apparatus in claim 19. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the pre-defined voltage to be 4.5 v based on the desired voltage ratings of the circuit and therefore, the designer has the

opportunity to pick the right configuration required by the features and design specifications for the rest of the circuit as a whole, since it has been held that discovering optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 21, Pancke et al. discloses the claimed said undervoltage relay controller apparatus of claim 19. Panck et al. discloses the claimed said control voltage is one of alternating type voltage and direct type voltage (col. 2, ll. 50-57).

8. Claims 4, 5, 6,7,8,17,22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pancke et al. (US 6,697,243) in view of Lang et al. (US 4,013,926) and further in view of (Paice et al. US 4,011,484).

Regarding claim 4, Pancke et al. in view of Lang et al. discloses the claimed said method of claim 1.Pancke et al. does not disclose providing a second control voltage greater than the pre-defined voltage; applying power to the solenoid; and resetting the circuit breaker.

However, Paice et al. discloses an undervoltage circuit having a voltage level detector, a reset circuit, and a hold-in circuit (abstract, ll. 1-2) providing a second control voltage greater than the preset level; applying power a solenoid; and resetting the circuit breaker (col. 1, ll. 39-51; col. 2, ll. 29-31). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a reset circuit taught by Paice et al. to the undervoltage release circuit of Pancke et al. to provide an improved reset and hold-in circuit for use with an undervoltage disconnect circuit.

Regarding claim 5, Pancke et al. in view of Lang et al. and further in view of Paice et al. discloses the claimed said method of claim 4. Paice discloses the claimed said step of detecting a magnitude qualification of the control voltage (col. 1, ll. 39-51; col. 2, ll. 29-31).

Regarding claim 6, Pancke et al. in view of Lang et al. and further in view of Paice et al. discloses the claimed said method of claim 5. Pancke et al. discloses the claimed said detecting includes engaging a detector output driver wherein if the control voltage falls below a preset level, the detector issuing a low gate level and deactivating a main driver MOSFET and the solenoid to trip the circuit breaker (col. 4, ll. 20-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the pre-defined voltage to be 4.5 v based on the desired voltage ratings of the circuit and therefore, the designer has the opportunity to pick the right configuration required by the features and design specifications for the rest of the circuit as a whole, since it has been held that discovering optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 7, Pancke et al. in view of Lang et al. and further in view of Paice et al. discloses the claimed said method of claim 5. Pancke et al. discloses the claimed said steps of disengaging the detector output driver if the if the control voltage is above 4.5 volts; enabling a gate of the main driver MOSFET; receiving a gate charge through a resistor (col. 4, ll. 20-42). Paice et al. discloses the resetting circuit for the circuit breaker (abstract).

Regarding claim 8, one would necessarily perform the recited method steps in using the undervoltage relay controller rejected above in claim 4.

Regarding claim 17, Pancke et al. in view of Lang et al. discloses the claimed said undervoltage relay controller apparatus of claim 12.Pancke et al. does not disclose providing a second control voltage greater than the pre-defined voltage; applying power to the solenoid; and resetting the circuit breaker.

However, Paice et al. discloses an undervoltage circuit having a voltage level detector, a reset circuit, and a hold-in circuit (abstract, ll. 1-2) providing a second control voltage greater than the preset level; applying power a solenoid; and resetting the circuit breaker (col. 1, ll. 39-51; col. 2, ll. 29-31). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a reset circuit taught by Paice et al. to the undervoltage release circuit of Pancke et al. to provide an improved reset and hold-in circuit for use with an undervoltage disconnect circuit.

Regarding claim 22, Pancke et al. in view of Lang et al. discloses the claimed said undervoltage relay controller apparatus of claim 19.Pancke et al. does not disclose providing a second control voltage greater than the pre-defined voltage; applying power to the solenoid; and resetting the circuit breaker.

However, Paice et al. discloses an undervoltage circuit having a voltage level detector, a reset circuit, and a hold-in circuit (abstract, ll. 1-2) providing a second control voltage greater than the preset level; applying power a solenoid; and resetting the circuit breaker (col. 1, ll. 39-51; col. 2, ll. 29-31). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a reset circuit taught by

Paice et al. to the undervoltage release circuit of Pancke et al. to provide an improved reset and hold-in circuit for use with an undervoltage disconnect circuit.

9. Claims 9,16,18,23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pancke et al. (US 6,697,243) and in view of Lang et al. (US 4,013,926) and further in view of Semiconductor Components Industries, LLC, 2001.

Regarding claim 9, Pancke et al. in view of Lang et al. discloses the claimed said method of claim 1. Pancke et al. does not disclose the apparatus can operate in a temperature range of at least –40C to +120C.

However, The Semiconductor Components Industries LLC, discloses an undervoltage detector (NCP301xSNssT1) that can be used to monitor low-voltage power supply appliances in automotive, consumer, and industrial equipment (page 1, Fig. 1) that can operate in a temperature range of at least –40C to +120C (page 2, Table 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the undervoltage detector taught by Pancke et al. with the voltage detector of Semiconductor Components Industries to provide a more efficient and highly accurate undervoltage detector for the integrated circuit breaker.

Regarding claim 16, Pancke et al. in view of Lang et al. discloses the claimed said undervoltage relay controller apparatus of claim 12. Pancke et al. discloses the claimed said electrical circuit includes a voltage detector ((OV3) and col. 2, ll. 50-57), coupled to the voltage input (K1, K2) and voltage output (K5, K6), the detector having an internal voltage divider (R5, R6), a current source (col. 3, ll. 20-23), a precision

voltage reference ((Z2) and col. 3, ll. 25-26), a comparator (OV1, OV2, OV4) and an output driver (ES1, ES2). Pancke et al. does not disclose a hysteresis switch.

However, The Semiconductor Components Industries LLC, discloses an undervoltage detector (NCP301xSNssT1) that can be used to monitor low-voltage power supply appliances in automotive, consumer, and industrial equipment (page 1, Fig. 1) with an hysteresis switch. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the undervoltage detector taught by Pancke et al. with the hysteresis switch of Semiconductor Components Industries to provide a more efficient and highly accurate undervoltage detector for the integrated circuit breaker.

Regarding claim 18, Pancke et al. in view of Lang et al. discloses the claimed said undervoltage relay controller apparatus of claim 12. Pancke et al. does not disclose the apparatus can operate in a temperature range of at least –40C to +120C.

However, The Semiconductor Components Industries LLC, discloses an undervoltage detector (NCP301xSNssT1) that can be used to monitor low-voltage power supply appliances in automotive, consumer, and industrial equipment (page 1, Fig. 1) that can operate in a temperature range of at least –40C to +120C (page 2, Table 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the undervoltage detector taught by Pancke et al. with the voltage detector of Semiconductor Components Industries to provide a more efficient and highly accurate undervoltage detector for the integrated circuit breaker.

Regarding claim 23, Pancke et al. discloses the claimed said undervoltage relay controller apparatus of claim 19.Pancke et al. does not disclose the apparatus can operate in a temperature range of at least –40C to +120C.

However, The Semiconductor Components Industries LLC, discloses an undervoltage detector (NCP301xSNssT1) that can be used to monitor low-voltage power supply appliances in automotive, consumer, and industrial equipment (page 1, Fig. 1) that can operate in a temperature range of at least –40C to +120C (page 2, Table 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the undervoltage detector taught by Pancke et al. with the voltage detector of Semiconductor Components Industries to provide a more efficient and highly accurate undervoltage detector for the integrated circuit breaker.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terrence R. Willoughby whose telephone number is 571-272-2725. The examiner can normally be reached on 8-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TRW
5/8/06

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